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sense and simplicity

Current state of wireless health and lessons learned:

Advancing patient care with innovation in wireless connectivity

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Key products and services of Philips Healthcare

Providing comprehensive support

Philips Healthcare

Businesses

Imaging Systems

Interventional X-Ray
Diagnostic X-Ray
CT
MR
SPECT/CT
PET/CT
Ultrasound
Women's health

Home Healthcare Solutions

Sleep disordered breathing
Respiratory care
Home monitoring

Patient Care and Clinical Informatics

Patient monitoring
Clinical informatics
Cardiac resuscitation
ECG solutions
Ventilation

Services

Site planning and project management
Ambient experience
Education
Performance services
Maintenance

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Inside the Healthcare Facility

Ambulatory & Wireless Patient Monitoring: Why Wireless?

- Enables freedom of movement for patients, which speeds recovery and minimizes complications
- Provides immediate access to patient data for mobile Care givers
- Improves recognition and response to changes in a Patient's condition
- Enables immediate and seamless integration of patient data into EMR and Clinical Decision Support Systems
- Facilitates goal of monitoring every hospital patient seamlessly from ER to discharge and lowers cost of care

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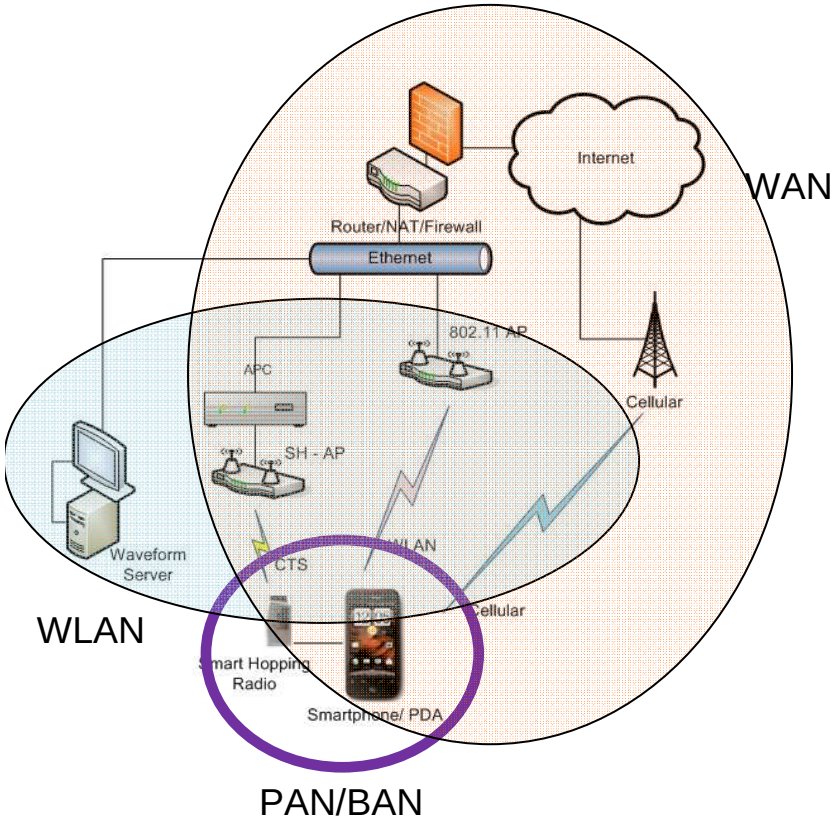
Extending Outside the Healthcare Facility

It's Complicated…



- Health and Well Being in the home
  - From exercise tracking to medical alerting services
- Monitoring in assisted living centers
  - From motion and temperature sensors to nurse call systems
  - Remote video consulting
- Smart phone medical applications over WAN/Wi-Fi links

Wireless solutions are systemic in nature…

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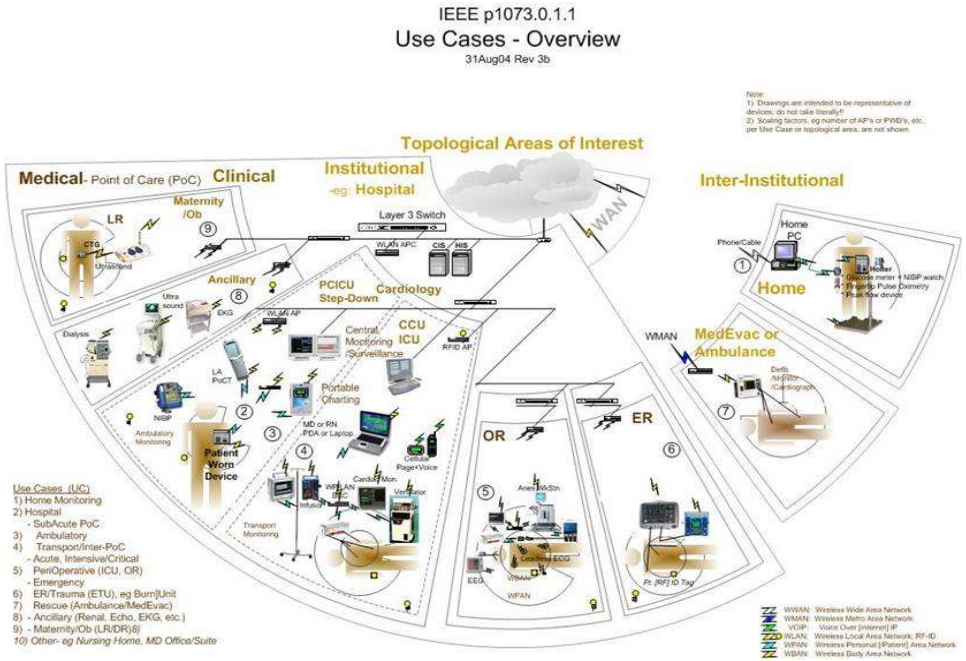
The wireless needs of healthcare are expanding

…Many types of devices to meet demand from variety of use models



Multitude of DEVICES

- Telemetry & sensors need long battery life & lower data rate solutions
- Wireless bedside devices demand higher data rate solutions
- Application servers and databases

Variety of Use MODELS

- Primary monitoring, e.g. telemetry, and bedsides
- Secondary support monitoring, e.g. wireless bedsides to central station
- Intermittent monitoring, e.g. vital signs monitoring

- These models cannot be satisfied by one wireless solution
  - Primary protected spectrum
  - Secondary shared spectrum
  - Unlicensed ISM spectrum
  - Safety coexistence mechanisms

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Conclusion…One size does not fit all

- Use of wireless medical devices is exploding
  - Hospital: Use of Wi-Fi in hospitals grew 60% last year*
  - Home: Interoperable personal healthcare solutions (continuaalliance.org)
  - Physician: Smart phones and tablet PC's

- Multiple wireless modalities of connectivity needed to meet multiple demands
  - Primary protected spectrum (WMTS)
  - Secondary shared spectrum (MBANS, WMTS proposals)
  - Unlicensed shared spectrum (Wi-Fi, smart hopping, etc.)
  - Licensed spectrum (WiMax, 3G, LTE)

- Challenges with today's technologies and approaches
  - 4G/LTE/WiMax must share spectrum with voice and data devices
  - Secondary use of idle spectrum, requested but not always granted
  - FCC Part 15 "must accept interference" and capacity limitations
  - Poorly defined shared authority for operation and safety of wireless medical devices

*http://www.ama-assn.org/amednews/2010/07/12/bisb0712.htm

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Solutions…

Improve patient care and protect safety by encouraging innovation and providing sufficient spectrum

- FCC should allocate more spectrum to meet growing demand for wireless medical devices; doing so would improve patient care and provide seamless data into electronic health records (EHRs)
  - Allocate more spectrum for secondary use, including WMTS at 1.4 GHz and MBANS at 2.3 GHz
  - Settle 'White Space" reconsideration petitions to remove current uncertainty and promote investment
  - Rule on spectrum request for use by implanted devices

- Cognitive radio technologies dynamically adapt to the changing RF environment with spectrum sensing, analysis and decision making, allowing for safe and effective use of secondary spectrum

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Solutions (cont.) …

- FCC and FDA should draft and adopt joint memorandum of understanding concerning wireless devices to clarify FCC's jurisdiction over wireless medical spectrum and FDA's jurisdiction over wireless medical safety

- FDA should finalize and release draft wireless guidance for safety of wireless medical devices

- FDA and FCC should organize industry experts work-shops/groups and define support for applicable voluntary standards (IEC 80001-1)